

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested in light of the following remarks.

Claims 1-9, 11-23 and 25-27 are pending, Claims 1, 15, 16, 26 and 27 having been amended, and Claims 28 and 29 having been canceled without prejudice or disclaimer.

In the outstanding Office Action Claims 1, 4, 11, 15, 18 and 26-29 were rejected as being unpatentable over Karim et al. (U.S. Patent No. 6,501,810) in view of Lee (U.S. Patent No. 6,373,861) and Raphaeli et al. (U.S. Patent No. 6,614,864, hereinafter Raphaeli); and Claims 2-3, 5-9, 12-14, 16-17, 19-23 and 25 were indicated as containing allowable subject matter. Applicant appreciatively acknowledges the identification of allowable subject matter.

The undersigned appreciatively acknowledges the courtesy extended by the Examiner in holding an interview with the undersigned on February 6, 2006. During the interview, the claims as presently presented were discussed and distinguished from the asserted prior art. The substance of what was discussed during the interview is reflected in the following remarks.

Amended Claim 1 is directed to a receiver for detecting and recovering data from at least one set of received signal samples. The signal samples include data bearing signal samples and guard signal samples, the guard signal samples being located before or after the data bearing signal samples and are formed by repeating a plurality of the data bearing signal samples.

As discussed during the interview, amended Claim 1 also includes a matched filter having an impulse response that is controllably adaptable. The receiver further includes a controller that is configured to change the impulse response of the matched filter to correspond with signal samples of the guard signal samples. This matched filter produces an

output signal that is representative of a convolution of the guard signal samples with the set of received signal samples. A synchronization detector estimates a location of the sync position based on a distribution of energy with respect to time of the matched filter output signal.

As discussed during the interview, perhaps there was some confusion regarding the language of original Claim 1, especially the language pointed out by the Examiner regarding “a controller operable to adapt the impulse response of said matched filter”. The language “to adapt” may not necessarily have been construed to mean “change” the impulse response of the matched filter. In order to clarify this issue, the claim language has been amended to define the matched filter having an impulse response that is controllably adaptable, and a controller is configured to change the impulse response of the matched filter to correspond with signal samples of the guard signal samples.

An advantage, as recognized by the present inventor, of having a matched filter with an impulse response that can be changed to match the signal samples of the guard signal samples (where the guard signal samples are located before or after the data bearing samples), allows for much better ability to resolve the candidate synchronization positions by analyzing the peaks from the output of the matched filter (see e.g. specification, page 14, lines 29-32). Moreover, when subjected to multipath (i.e. a communications channel with different “echoed” signals), there is ambiguity regarding which “echoed” signal on which to synchronize. The present inventor recognized that by using a matched filter whose impulse response is changed to represent how the guard signals have been modified in the channel allows for clearly resolvable synchronization windows regardless of the presence of multipath.

In contrast, a correlator is inferior in that it does not similarly provide the same resolution of candidate synchronization positions, at least not nearly as well as the matched filter with controllably adaptable impulse response. Moreover, the correlator's output tends to "smear" the multiple candidate correlation peaks associated with the different multipath signals. Therefore, with the claimed signal structure accurately detecting the appropriate synchronization window is more difficult using a correlator than a matched filter with a changeable impulse response, as claimed.

In view of the differences between the correlator and the matched filter with adaptable impulse response characteristics, it is respectfully submitted that the Office Action's citation of Raphaeli does not correspond with the presently claimed invention. Moreover, the outstanding Office Action's assertion that "because it is known that matched filter and correlator are used interchangeably because they produce the same result ..." is incorrect. As discussed during the interview, the present specification (e.g. at page 14, lines 27-32) teaches the advantages of using a matched filter, with a controllably adaptable impulse response to provide superior resolution of candidate synchronization peaks when the receiver is subjected to signals corrupted with multipath. Consequently, Applicant traverses the Office Action's assertion that a correlator and matched filter provide the same result, and therefore also traverse the basis by which Claim 1 was rejected.

Although of differing scope and/or statutory class, it is respectfully submitted that Claims 4, 11, 15, 18 and 26-27, as amended, also patentably define over the asserted prior art for at least the same reasons as discussed above with regard to amended Claim 1.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 1-9, 11-23 and 25-27, as amended, is patentably distinguishing over the prior art. The present application is

therefore believed to be in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)



Bradley D. Lytle
Attorney of Record
Registration No. 40,073

BDL\maj
I:\ATTY\BDL\28s\282432US\282432US.AM1_021506.DOC